

## Enzymes: Guided Notes Questions

1. Compare & Contrast the overall functions & structures of hemoglobin & myoglobin.
2. Hemoglobin binds oxygen cooperatively, explain the meaning of this.
3. Myoglobin & hemoglobin essentially compete with each other for obtaining oxygen. Use the graph on p. 4 to justify which line represents hemoglobin and which represents myoglobin.
4. Justify the claim that myoglobin has a higher affinity (desire) for oxygen than hemoglobin.  
Hint: Examine the percent O<sub>2</sub> saturation (y-axis) of myoglobin vs. hemoglobin at several PO<sub>2</sub> (x-axis) data points.
5. Why do both lines level off after a certain point?
6. Enzymes are catalytic PROTEINS. Explain then, why their function can be disrupted by an out-of-the ordinary change to their environment (temperature change, pH change, etc.) Hint: remember the 4 different levels of protein structure.
7. Use the graph on p. 6 to explain why the change in free energy is less than zero ( $\Delta G < 0$ ).
8. Explain the effects enzymes have on free energy & activation energy.
9. Summarize the steps of an enzyme-catalyzed reaction and how enzymes lower activation energy requirements.
10. Explain why each enzyme has an optimal pH & temperature at which it functions, and give some general examples.
11. Assume that a particular enzyme is essential for some function (duh). Explain why a noncompetitive inhibitor would have a much worse effect on enzyme function than a competitive inhibitor (use slides on pp. 11-12 for help).
12. What 2 ways can a cell control metabolism?
13. Summarize how allosterically regulated enzymes are regulated by inhibitors & activators.
14. Compare & contract allosteric activation with cooperativity.